IN THE CLAIMS:

No claims have been amended herein. Please note that all claims currently pending and under consideration in the referenced application are shown below. This listing of claims will replace all prior versions and listings of claims in the application.

Listing of Claims:

1.   (Previously Presented) A method for performing coupled finite analyses to resolve a joint problem between finite analysis programs, the method comprising:

providing first and second finite analysis programs, wherein one of the first and the second finite analysis programs is a computational fluid dynamics program;

identifying the joint problem through use of a graphical user interface operable to identify the joint problem and to specify at least one criterion for a joint solution, wherein both the first and the second finite analysis programs can jointly and in combination solve the joint problem using the at least one criterion;

providing first program input values to the first finite analysis program;

executing the first finite analysis program to obtain first program output values including a first joint data set;

providing the second finite analysis program with second program input values including the first joint data set;

executing the second finite analysis program to provide second program output values including a second joint data set; and

providing the first finite analysis program with the first program input values including the second joint data set.

2.   (Previously Presented) The method according to claim 1, wherein the at least one criterion for the joint solution specified by the graphical user interface includes an iterative convergence criterion for a threshold convergence of the joint solution and the method further comprises repeating the acts of providing first program input values, executing the first finite

analysis program, providing the second finite analysis program, executing the second finite analysis program, and providing the first finite analysis program, until the threshold convergence is achieved.

3.   (Previously Presented) The method according to claim 2, wherein repeating the acts is performed automatically and without user intervention.

4.   (Previously Presented) The method according to claim 1, wherein the act of providing the first and the second finite analysis program further comprises selecting another of the first and the second finite analysis programs from the group consisting of a structural analysis program, a heat transfer program, a chemical reaction program, a chemical equilibrium analysis program, an internal ballistics program, and a fracture mechanics program.

5.   (Previously Presented) The method according to claim 1, further comprising: providing third program input values to a third finite analysis program, wherein the third program input values include data selected from the group consisting of the first joint data set, the second joint data set, and combinations thereof; and executing the third finite analysis program to provide third program output values including a third joint data set.

6.   (Previously Presented) The method as set forth in claim 5, further comprising providing the third joint data set as input values to the first finite analysis program, the second finite analysis program, or combinations thereof.

7.   (Previously Presented) The method according to claim 6, wherein the at least one criterion for the joint solution specified by the graphical user interface includes an iterative convergence criterion for a threshold convergence of the joint problem and the method further comprises repeating the acts of providing first program input values, executing the first finite analysis program, providing the second finite analysis program, executing the second finite analysis program, providing the first finite analysis program, providing third program input

values, executing the third finite analysis program, and providing the third joint data set, until threshold convergence is achieved.

8.   (Previously Presented) The method according to claim 1, wherein providing the second finite analysis program with second program input values is performed automatically and without user intervention.

9.   (Previously Presented) The method according to claim 1, wherein providing the first finite analysis program with first program input values is performed automatically and without user intervention.

10.   (Previously Presented) The method according to claim 1, wherein the graphical user interface includes an interface for selecting the joint problem as including an additional program and for creating a user-specified data link operable to provide the additional program with shared input values selected from the group consisting of the first program output values, the second program output values, and combinations thereof, and the method further comprises selecting the joint problem including the additional program through use of the interface.

11.   (Previously Presented) The method according to claim 10, wherein the additional program acts upon the shared input values and creates shared output values selected from the group consisting of the first program input values, the second program input values, and combinations thereof, and the method includes providing the shared output values to the first and the second finite analysis programs as specified by the user.

12.   (Original) The method as set forth in claim 1, wherein the computational fluid dynamics program comprises a crack-combustion program.

13.   (Previously Presented) The method as set forth in claim 12, wherein the method further comprises a means for modeling crack combustion in a missile based upon a computed tomography taken from a missile.

14.   (Previously Presented) The method as set forth in 13, wherein another of the first and the second finite analysis programs comprises a structural mechanics program.

15.   (Previously Presented) The method according to claim 1, wherein the act of identifying the joint problem includes using the graphical user interface to select from a list of preprogrammed functions.

16.   (Previously Presented) A system for obtaining a solution to a joint problem, the system comprising:

a storage medium configured for storing:

      first and second finite analysis programs, wherein one of the first and the second finite analysis programs is a computational fluid dynamics program; and

      a graphical user interface operable to identify the joint problem and to specify at least one criterion for a joint solution, wherein both the first and the second finite analysis programs can jointly and in combination solve the joint problem;

a processor operably coupled to the storage medium for executing:

      the first finite analysis program to obtain first program output values including a first joint data set;

      the second finite analysis program to obtain second program output values including a second joint data set; and

      the graphical user interface; and

an input device operably coupled to the processor and configured for providing first program input values and second program input values;

wherein the storage medium is further configured for providing the second finite analysis program with the second program input values including the first joint data set; and

wherein the storage medium is further configured for providing the first finite analysis program with the first program input values including the second joint data set.

17.   (Previously Presented) The system as set forth in claim 16, wherein the at least one criterion for the joint solution specified by the graphical user interface includes an iterative convergence criterion for a threshold convergence of the joint solution and the system comprises program instructions for repeating calculations until the threshold convergence is achieved.

18.   (Previously Presented) The system as set forth in claim 17, wherein the program instructions for repeating calculations operates automatically until the threshold convergence is achieved.

19.   (Previously Presented) The system as set forth in claim 16, wherein the graphical user interface comprises a menuing system for selecting the joint problem as a problem combining the computational fluid dynamics program with another of the first and the second finite analysis programs selected from the group consisting of a structural analysis program, a heat transfer program, a chemical reaction program, a chemical equilibrium analysis program, an internal ballistics program, and a fracture mechanics program.

20.   (Previously Presented) The system as set forth in claim 16, wherein:
the processor is further configured for executing a third finite analysis program to obtain third
        program output values including a third joint data set;
the input device is further configured for providing third program input values; and
the storage medium is further configured for storing the third finite analysis program and
        providing the third finite analysis program with the third program input values including
        input values selected from the group consisting of the first joint data set, the second joint
        data set, and combinations thereof.

21.   (Previously Presented) The system as set forth in claim 20, including a predetermined data linkage for providing the third joint data set as input values to the first finite analysis program, the second finite analysis program, or combinations thereof.

22.   (Previously Presented) The system as set forth in claim 21, wherein the criterion for the joint solution specified by the graphical user interface includes an iterative convergence criterion for a threshold convergence of the joint problem and the system comprises program instructions for repeating calculations until the threshold convergence is achieved.

23.   (Previously Presented) The system as set forth in claim 16, wherein the graphical user interface includes an interface for selecting the joint problem as one including an additional program and for creating a user-specified data link operable to provide the additional program with shared input values selected from the group consisting of the first program output values, the second program output values, and combinations thereof.

24.   (Previously Presented) The system as set forth in claim 23, wherein the additional program acts upon the shared input values and creates shared output values selected from the group consisting of the first program input values, the second program input values, and combinations thereof, and
the system comprises a predetermined data linkage for providing the shared output values to the
   first and the second finite analysis programs as specified by the user.

25.   (Original) The system as set forth in claim 16, wherein the computational fluid dynamics program comprises a crack combustion program.

26.   (Previously Presented) The system as set forth in claim 25, wherein the system comprises means for modeling crack combustion through use of the crack combustion program in a missile based upon a computed tomography taken from the missile.

27.   (Previously Presented) The system as set forth in claim 26, wherein another of the first and the second finite analysis programs is a structural mechanics program.

28. (Original) The system as set forth in claim 16, wherein the system comprises program instructions for identifying the joint problem by use of the graphical user interface to select from a list of preprogrammed functions.

29. (Previously Presented) The system as set forth in claim 28, comprising the preprogrammed functions being in an extensible object oriented scripting language possessing looping and decisional logic capabilities.

30. (Previously Presented) A computer readable form for use in an operating environment including an input device for providing user input, a storage medium for storing instructions, and a processor operably coupled to the storage medium, the computer readable form comprising the instructions for execution on the processor to perform a process comprising: executing a graphical user interface operable to accept the user input, identify a joint problem,

and to specify at least one criterion for a joint solution, wherein both a first and a second finite analysis program can jointly and in combination solve the joint problem and one of the first and the second finite analysis programs is a computational fluid dynamics program;

executing the first finite analysis program acting upon first program input values, which include at least some of the user input, to provide first program output values including a first joint data set;

executing the second finite analysis program acting upon second program input values, which include at least some of the user input and the first joint data set, to provide second program output values including a second joint data set; and

providing the first finite analysis program with the first program input values including the second joint data set.

31. (Previously Presented) The computer readable form as set forth in claim 30, wherein the at least one criterion for the joint solution specified by the graphical user interface

includes an iterative convergence criterion for a threshold convergence of the joint solution, and the computer readable form comprises instructions for repeating calculations until the threshold convergence is achieved.

32.   (Previously Presented) The computer readable form as set forth in claim 30, wherein:
the graphical user interface comprises instructions for selecting the joint problem as one in which one of the first and the second finite analysis programs is the computational fluid dynamics programs and another of the first and the second finite analysis programs is selected from the group consisting of a structural analysis program, a heat transfer program, a chemical reaction program, a chemical equilibrium analysis program, an internal ballistics program, and a fracture mechanics program.

33.   (Previously Presented) The computer readable form as set forth in claim 30, including instructions for executing a third finite analysis program acting upon third program input values, which include the first joint data set, the second joint data set, or combinations thereof, to provide third program output values including a third joint data set.

34.   (Previously Presented) The computer readable form as set forth in claim 33, including instructions for providing the third joint data set as input values to the first finite analysis program, the second finite analysis program, or combination thereof.

35.   (Previously Presented) The computer readable form as set forth in claim 34, wherein the at least one criterion for the joint solution specified by the graphical user interface includes an iterative convergence criterion for a threshold convergence of the joint problem and the computer readable form comprises instructions for iterating until the threshold convergence is achieved.

36.   (Previously Presented) The computer readable form as set forth in claim 30, wherein the graphical user interface includes instructions for an interface for identifying the joint problem as one including an additional program and for creating a user-specified data link operable to provide the additional program with shared input values selected from the group consisting of the first program output values, the second program output values, and combinations thereof.

37.   (Previously Presented) The computer readable form as set forth in claim 36, wherein:

the additional program includes instructions for acting upon the shared input values and creating
        shared output values, and

the computer readable form comprises instructions for providing the shared output values to the
        first finite analysis program, the second finite analysis program, or combinations thereof,
        as specified by the user.

38.   (Previously Presented) The computer readable form as set forth in claim 30, wherein the computational fluid dynamics program is a crack combustion program, and the computer readable form comprises instructions for modeling crack combustion in a missile based upon a computed tomography taken from the missile through use of the crack combustion program.

39.   (Previously Presented) The computer readable form as set forth in claim 30, wherein the instructions are operable for identifying the joint problem by use of the graphical user interface to select from a list of preprogrammed functions.

40.   (Previously Presented) The computer readable form as set forth in 39, comprising the preprogrammed functions written in an extensible object oriented scripting language possessing looping and decisional logic capabilities.

41.   (Previously Presented) A computer readable form for use in an operating environment including an input device for providing user input, a storage medium for storing instructions, and a processor operably coupled to the storage medium, the computer readable form comprising the instructions for execution on the processor to perform a process comprising:
executing a scripting language with a preprogrammed function library operable to identify a joint

> problem and to specify at least one criterion for a joint solution, wherein both a first and a
> second finite analysis program can jointly and in combination solve the joint problem and
> one of the first and the second finite analysis programs is a computational fluid dynamics
> program;

executing the first finite analysis program acting upon first program input values to provide first

> program output values including a first joint data set;

executing the second finite analysis program acting upon second program input values, which

> include the first joint data set, to provide second program output values including a
> second joint data set; and

providing the first finite analysis program with the first program input values including the

> second joint data set.

42.   (Previously Presented) The computer readable form as set forth in claim 41, wherein the at least one criterion for the joint solution specified by the scripting language includes an iterative convergence criterion for a threshold convergence of the joint solution, and the computer readable form comprises instructions for repeating calculations until the threshold convergence is achieved.

43.   (Previously Presented) The computer readable form as set forth in claim 41, wherein the function library comprises instructions for selecting the joint problem as one in which one of the first and the second finite analysis programs is the computational fluid dynamics program and another of the first and the second finite analysis programs is selected from the group consisting of a structural analysis program, a heat transfer program, a chemical reaction program, a chemical equilibrium analysis program, an internal ballistics program, and a fracture mechanics program.

44.   (Previously Presented) The computer readable form as set forth in claim 41, including instructions for executing a third finite analysis program acting upon third program input values, which include the first joint data set, the second joint data set, or combinations thereof, to provide third program output values including a third joint data set.

45.   (Previously Presented) The computer readable form as set forth in claim 44, including instructions for providing the third joint data set as input values to the first finite analysis program, the second finite analysis program, or combination thereof.

46.   (Previously Presented) The computer readable form as set forth in claim 45, wherein the at least one criterion for the joint solution specified by the scripting language includes an iterative convergence criterion for a threshold convergence of the joint problem and the computer readable form comprises instructions for iterating until the threshold convergence is achieved.